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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,807	06/15/2006	David Andrew Horsnell	16970US01	3988
23446 7590 08/15/2007 MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661			EXAMINER MARTIN, LAURA E	
			ART UNIT 2853	PAPER NUMBER
			MAIL DATE 08/15/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/550,807

**Applicant(s)**

HORSNELL ET AL.

**Examiner**

Laura E. Martin

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The listing of references in the Patent Cooperation Treaty is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office. Unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Priority***

Acknowledgement is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed on 9/23/05.

### ***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

Claim 3 is objected to because of the following informalities: "the plunger" should be "a plunger". Appropriate correction is required.

Claim 5 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim (claim 3). See MPEP § 608.01(n). Accordingly, the claim\*\*\* not been further treated on the merits.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor et al. (EP 0109242 A2).

**Taylor et al. disclose the following claim limitations:**

As per claim 1: a drop on demand ink printer (page 1, lines 5-10), characterized in that the printer is operated at a fluid pressure of between 1 and 3.5 bar (page 17, line 21-page 18, line 14) and that the image forming composition has a viscosity of less than 100 cp (page 17, lines 14-20).

As per claim 2: the viscosity of the image forming composition is in the range of 5 to 20 cp (page 17, lines 14-20).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al. (EP 0109242 A2) in view of Horsnell et al. (WO 03/069201 A1).

**Taylor et al. disclose the following claim limitations:**

As per claim 3: the method of claims 1 and 2; and an array of nozzles (page 2,

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lines 18-22), a solenoid valve (page 13, lines 8-17) to, in use, control the flow of the image forming composition through the nozzle orifices, the nozzle openings having a diameter in the range of 20 to 200 micrometers (page 11, lines 9-25).

As per claim 4: the nozzle orifices have a diameter in the range of substantially 40 to 60 micrometers for thin mesh fabric types (page 11, lines 9-25 – nozzles in the range for any type of print media).

As per claim 5: the solenoid valve mechanisms for controlling the flow of fluid to the nozzle orifice comprises a plunger member journalled for axial reciprocation between a rest and an operative position (figure 7; page 13, line 18-page 14-line 18).

**Taylor et al. do not disclose the following claim limitations:**

As per claim 3: a plunger of the solenoid valve has a diameter of less than 2.5 mm.

As per claim 5: a plunger member journalled within an electric coil under the influence of a magnetic field generated by that coil when an electric current passes through the coil, the distal end of the plunger extending into a valve head chamber having an outlet nozzle bore, the reciprocation of the plunger being adapted to open or close a fluid flow path from the valve head chamber through that bore, characterised in that: a. the plunger is of a unitary construction and is made from an electromagnetically soft material having a saturation flux density greater than 1.4 Tesla, preferably about 1.6 to 1.8 Tesla, a coercivity of less than 0.25 ampere per metre, and a relative magnetic permeability in excess of 10,000; and b. the nozzle bore leading from the valve head

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chamber to the nozzle orifice has a length to diameter ratio of less than 8:1, preferably from 1.5:1 to 5:1, notably from 2:1 to 4:1.

As per claim 6: the valve is held in the open position for a prolonged period of time to print continuous lines on the mesh fabric.

As per claim 7: the amplitude of the current flowing through the coil required to hold the plunger in the valve open position is surprisingly much less, typically 80 to 50% less, than the current required to move the plunger initially away from its rest position.

**Horsnell et al. disclose the following claim limitations:**

As per claim 3: a plunger of the solenoid valve has a diameter of less than 2.5 mm (claim 6).

As per claim 5: a plunger member journaled within an electric coil under the influence of a magnetic field generated by that coil when an electric current passes through the coil, the distal end of the plunger extending into a valve head chamber having an outlet nozzle bore, the reciprocation of the plunger being adapted to open or close a fluid flow path from the valve head chamber through that bore, characterised in that: a. the plunger is of a unitary construction and is made from an electromagnetically soft material having a saturation flux density greater than 1.4 Tesla, preferably about 1.6 to 1.8 Tesla, a coercivity of less than 0.25 ampere per metre, and a relative magnetic permeability in excess of 10,000; and b. the nozzle bore leading from the valve head chamber to the nozzle orifice has a length to diameter ratio of less than 8:1, preferably from 1.5:1 to 5:1, notably from 2:1 to 4:1 (claim 1).

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As per claim 6: the valve is held in the open position for a prolonged period of time to print continuous lines on the mesh fabric (page 12, line 23-page 13, line 12).

As per claim 7: the amplitude of the current flowing through the coil required to hold the plunger in the valve open position is surprisingly much less, typically 80 to 50% less, than the current required to move the plunger initially away from its rest position (page 12, line 23-page 13, line 12).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method taught by Taylor et al with the disclosure of Horsnell et al. in order to provide a higher quality printing method.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kataoka et al. (US 2001/0055053 A1) discloses printing on a fabric (mesh).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Laura E. Martin

 8/13/07  
**MANISH S. SHAH**  
**PRIMARY EXAMINER**